

REMARKS

Claims 2, 4, 7, 8, 9, 11 and 14 and the Specification have been amended for improved clarity. Certain claims have been amended to recite amino acids 1-107 of SEQ ID NOs:4-12. Entry of new claims 15 and 16 has been requested. The amendments and the new claims are supported by as-filed Tables 1 and 2, as-filed claim 12 and by the as-filed Specification at page 15, first paragraph. Accordingly, the present Amendment does not constitute the addition of new matter.

The Requirement for Restriction

The Patent Office has required restriction under 35 U.S.C. 121, alleging that the claims represent patentably distinct inventions:

- I. Claims 1-9, drawn to a non-naturally occurring recombinant DNA molecule comprising a sequence encoding a chelon protein, a transformed host cell and a methods for producing a recombinant chelon protein, classified in class 435, subclass 69.1, for example.
- II. Claims 10-14, drawn to a method for removing a divalent mercury or cadmium cation using a MerR or chelon protein, classified in class 800, subclass 278, for example.

The Patent Office has further required restriction for each Groups I and II, and has also required election of one of "inventions" (A)-(I), for one of SEQ ID NO:4-12, respectively. The Examiner has incorrectly alleged that Inventions (A)-(I) are unrelated. The Examiner stated that "the different inventions represent structurally different polypeptides encoded by structurally different polynucleotides. Therefore, where structural identity is required, such as by hybridization or expression, the different sequences have different effects. In addition, since each polypeptide is

disclosed in specific SEQ ID NO: the structural difference between the polypeptides is not shown to be obvious."

Applicants respectfully elect, with traverse, the claims of Group I for examination. Applicants request that new claim 15 be included together with the Group I claims and that new claim 16 should be included with the Group II claims. It is noted that the chelon proteins of the present invention are not naturally occurring proteins, and as the products of non-naturally occurring nucleotide sequences, they should be grouped together with the recombinant DNA molecules encoding them, recombinant host cells and methods of recombinant production.

Applicants respectfully request that the election of one of (A) through (I) be treated as an election of species, so that the Examiner, finding the election of species allowable, will proceed to examine the remaining species. Applicants urge that the sequences of, or encoding a "chelon," be considered a genus and that the particular sequences be considered species within the genus. These proteins are related in structure (see, e.g., Tables 1 and 2) as well as in function – each binds mercuric ion. See, e.g., the paragraph bridging pages 3 and 4. Thus, Applicants respectfully maintain that "Inventions" (A)-(I) are **not** unrelated, as alleged by the Examiner. In the present case, the sequences of the chelon proteins are related in structure and in function, and the sequences in SEQ ID NOs. 5-12 are variants of SEQ ID NO:4. Applicants respectfully request that the Patent Office search these sequences.

Applicants provide the relationships of SEQ ID NOs:5-12 to SEQ ID NO:4. SEQ ID NO:5 differs from NO:4, with substitutions of Val for Ala at positions 7 and 65. SEQ ID NO:6 differs from NO:4, with substitutions of Val for Ala at positions 11 and 70. SEQ ID NO:7 differs from NO:4, with substitutions of Thr for Lys at positions 21 and 79. SEQ ID NO:8 differs from NO:4,

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with substitutions of Gln for Lys at positions 21 and 79. SEQ ID NO:9 differs from NO:4, with substitutions of Val for Met at positions 28 and 86. SEQ ID NO:10 differs from NO:4, with

substitutions of Ile for Met at positions 29 and 86. SEQ ID NO:11 differs from NO:4, with substitutions of Pro for Ser at positions 47 and 105. SEQ ID NO:12 differs from NO:4, with a single substitution of Leu for Ser at position 53. Thus, the sequences of the specifically exemplified chelon proteins are highly conserved.

Applicants elect, with traverse, the species within the invention identified in Group I where the encoded chelon protein comprises the amino sequence set forth in SEQ ID NO:4. Applicants note that the particular nucleotide sequence encoding a protein of this amino acid sequence (amino acids 1-107) is set forth in SEQ ID NO:3.

In sum, and in view of the structural and functional relatedness of the specifically identified species of chelon protein, Applicants respectfully request that the Examiner restate the requirement for the election of one of SEQ ID NOs:4-12 as a requirement for an election of species. Further, in view of the structural and functional relationship of the specifically exemplified chelon proteins and the utility of the DNA molecules, recombinant cells and methods of recombinantly producing the chelon proteins of the present invention in the method for removing metal ions from a source containing those ions, Applicants respectfully request the rejoinder of the Group I and Group II claims.

Conclusion

In view of the foregoing, it is submitted that this case is in condition for allowance, and passage to issuance is respectfully requested.

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If there are any outstanding issues related to patentability, the courtesy of a telephone interview is requested, and the Examiner is invited to call to arrange a mutually convenient time.

This amendment is accompanied by a Petition for Extension of Time (one month) and authorization to charge the amount of \$55.00 as required under 37 C.F.R. 1.17. It is believed that this amendment does not necessitate the payment of any additional fees under 37 C.F.R. 1.16-1.17. If the amount submitted is incorrect, however, please charge any additional fee or credit any overpayment to Deposit Account No. 07-1969.

Respectfully submitted,

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